

1 26. The apparatus of claim 25, further including an
2 auxiliary power source capable of providing a control power
3 signal at a preselected control signal voltage, regardless of the
4 magnitude of the ac input signal.

1 27. The apparatus of claim 26, wherein the auxiliary
2 power source includes an auxiliary transformer with a plurality
3 of primary taps.

1 28. The apparatus of claim 25, wherein the converter
2 includes a boost circuit.

1 29. The apparatus of claim 25, wherein the output
2 circuit includes a pulse width modulator.

1 30. The apparatus of claim 29, wherein the converter
2 includes a boost circuit.

1 31. The apparatus of claim 25, wherein the output
2 circuit includes an inverter.

1 32. The apparatus of claim 25 wherein the output
2 circuit includes a rectifier.

1 33. The apparatus of claim 25 wherein the output
2 circuit includes a cycloconverter.

1 34. A method of providing a welding, cutting or
2 heating current, comprising:
3 converting and power factor correcting an ac input
4 signal to a second ac signal; and
5 changing the second ac signal into a third signal
6 having a current suitable for welding, cutting or heating.

1 35. The method of claim 34, wherein converting the ac
2 input signal includes boost converting the ac signal.

1 36. The method of claim 34 further including providing
2 control signals to the converter.

1 37. The method of claim 34, further including
2 providing auxiliary power signal by transforming the ac input
3 signal.

1 38. The method of claim 34, wherein changing includes
2 pulse width modulating.

1 39. The method of claim 34, wherein changing includes
2 inverting.

1 40. A welding, cutting or heating power source,
2 comprising:

3 rectifier means for receiving an ac input providing a
4 first dc signal;

5 converter means for receiving the first dc signal and
6 providing a converter output;

7 control means for controlling the converter means,
8 wherein the control means includes a power factor correction
9 means for power factor correction, connected to the
10 converter means;

11 output means for receiving the converter output and
12 providing a welding, heating or cutting signal.

13 41. The apparatus of claim 40, wherein the converter
14 means includes a boost circuit.

1 42. The apparatus of claim 42, wherein the output
2 means includes a pulse width modulator.

1 43. The apparatus of claim 40, wherein the output
2 circuit includes an inverter.

1 44. The apparatus of claim 40 wherein the output
2 circuit includes a rectifier.

1 45. A weldment or metal cut formed by a process
2 which comprises:

3 converting and power factor correcting an ac input
4 signal to a second ac signal; and

5 changing the second ac signal into a third signal
6 having a current suitable for welding or cutting.
